

Research for Sustainability in the Coastal Zone of the Balearic Islands

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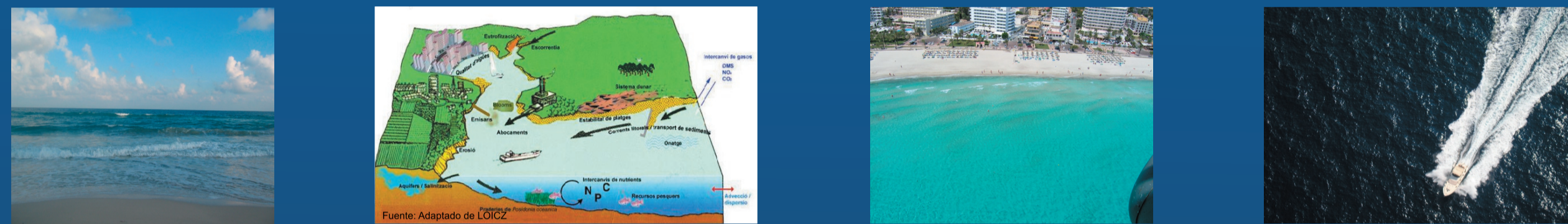
1. Global Change

Global change can be defined as, "changes in the global environment (including alterations in climate, land productivity, oceans or other water resources, atmospheric chemistry, and ecological systems) that may alter the capacity of the Earth to sustain life" (Global Change Research Act of 1990).



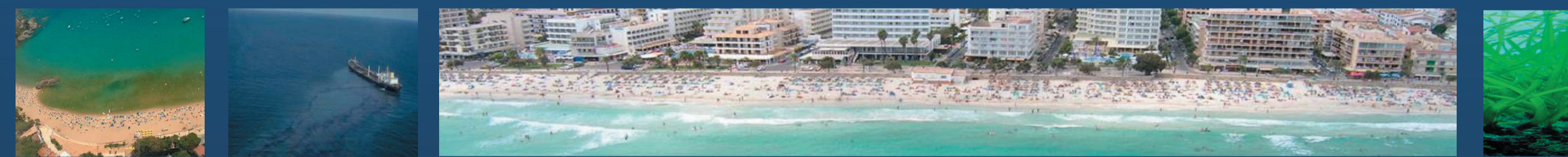
2. Global change in the coastal zone

Coastal zones are extremely complex socio-ecological systems that play an important role in global cycles and are especially sensitive to the effects of global change. The coastal zone provides a wide range of goods and services and is inhabited by a significant portion of the global population. The importance of this zone is especially evident in coastal countries where it is often the primary engine of development and economic activities, thus establishing a clear link between quality of life and the health of coastal ecosystems.



3. Global change in the Balearic Island

There is already evidence of social, economic and environmental repercussions in the Balearic Islands related to changes in marine water quality, beach erosion, loss of coastal dunes, the appearance of red tides, loss of fisheries resources, degradation of *Posidonia oceanica*, the proliferation of invasive species, extreme weather events, and accidental spills. As global change becomes more of a reality, these impacts will be exacerbated. In addition, the factor of insularity makes the Balearic Islands even more vulnerable to these changes because, among others, islands possess the characteristics of having limited resources, limited capacity to manage waste, and a heightened sensitivity to social and environmental change.



4. Global change, research and ICZM

Understanding the effects of global change and the complexity of the coastal zone require a solid base in research. Science should play an important role in developing new forms of coastal management that based on viable information.



Integrated Coastal Zone Management (ICZM) is a dynamic, multidisciplinary process that supports sustainable development in the coastal zone, defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report 1987).

ICZM seeks to develop a new model for development that is based on finding points of equilibrium among governance, economic needs, quality of life and preservation of natural resources. If properly implemented, it is the most effective tool to advance towards sustainability in the coastal zone, ensuring equitable use of coastal resources (natural, socioeconomic, and cultural) and integration among the different administrative sectors and sectors of society.



5. R + D + i ICZM Project

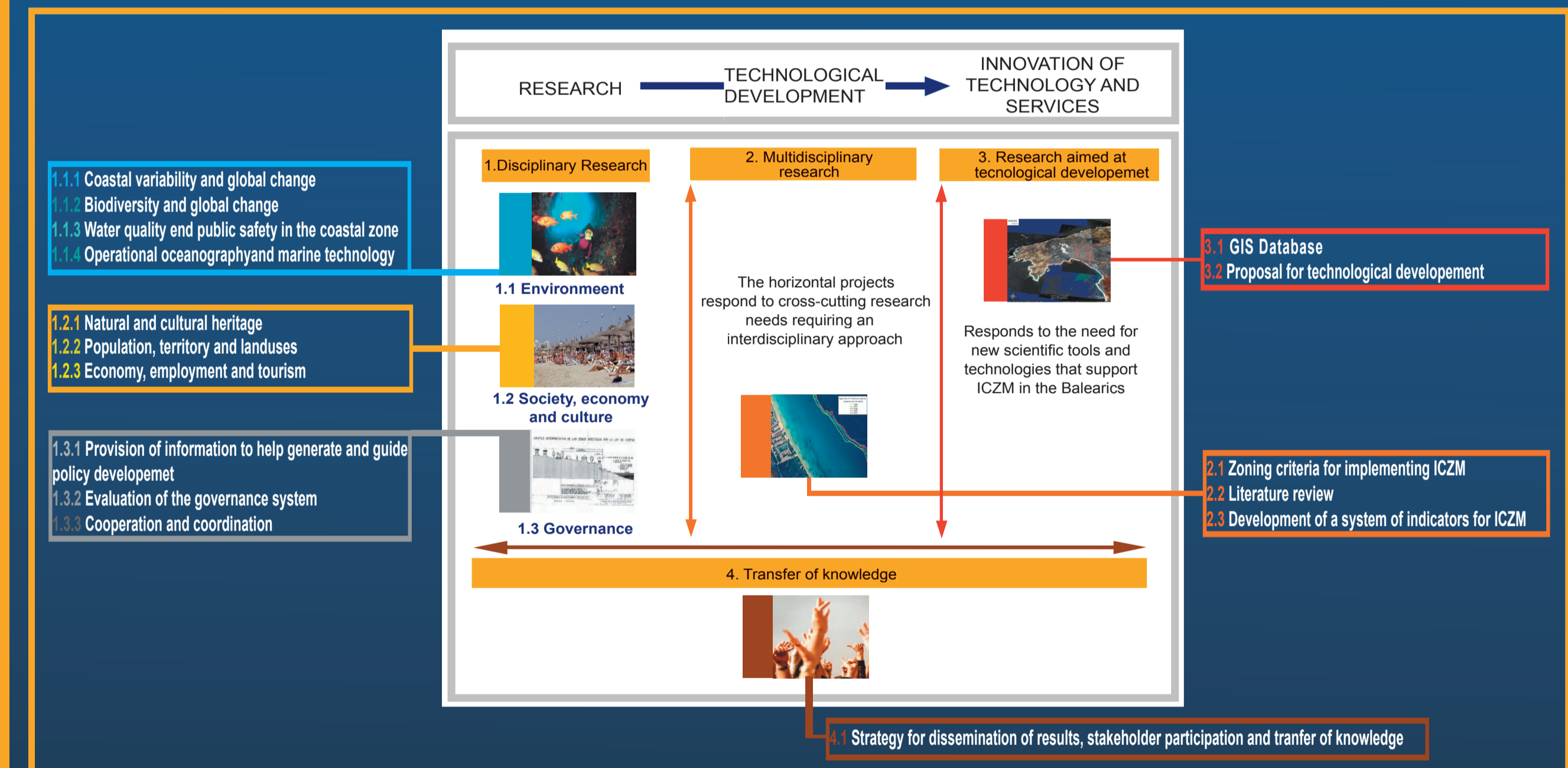
The preservation of the environment and the restoration of coastal zones are essential elements for guaranteeing sustainability in the coastal zone of the Balearic Islands and, additionally, to ensure the quality of life of residents, the competitiveness of economic activities, and conservation of natural resources and cultural values.

To respond to these needs, the Government of the Balearic Islands and the National Research Council of Spain created an ICZM Research Group within IMEDEA in 2005. This initiative recognizes high quality research as an essential element for advancing towards sustainable management of the coastal zone of the Balearic Islands.

The objective of the R + D ICZM Project is to generate necessary scientific understanding, through quality research and provision of tools and technology, in order to advance towards sustainable management of the coastal zone in the Balearic Islands. The ultimate goal of this project is to generate the basic scientific elements and collaborate in defining a new Strategy for Sustainability for the Coastal Zone of the Balearic Islands, which could be implemented by the Government of the Balearic Islands in 2008-2009.



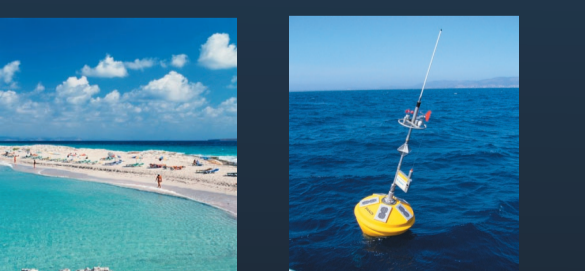
The project has developed along 4 main research lines, which include three vertical lines and one that is horizontal or transverse to the other three. These include (1) disciplinary research, (2) multidisciplinary research, (3) technological development, (4) the horizontal research line which is transfer of knowledge and dissemination of results to society and decision-makers.



The project consists of 35 research projects within the 4 research lines which respond to internationally accepted priorities. There are currently more than 50 researchers involved in these works from multiple disciplines and institutions. The projects fall within a number of research themes including coastal variability, biodiversity, functionality of ecosystems and global change, quality and security of coastal waters, socio-economic assessments and development of new marine technology.

6. Conclusions

Achieving sustainability in the coastal zone is an important challenge for the Balearic Islands. The multidisciplinary R + D ICZM will generate the scientific understanding that is necessary to understand the effects of global change in the coastal zone. In this way, this initiative will improve our capacity to predict future changes and advance towards sustainable management of the coastal zone based in understanding.



GUIDING VISION FOR THE CCSP (CLIMATE CHANGE SCIENCE PROGRAMME AND THE SUBCOMMITTEE ON GLOBAL CHANGE RESEARCH, 2007):

A NATION AND THE GLOBAL COMMUNITY EMPOWERED WITH THE SCIENCE-BASED KNOWLEDGE TO MANAGE THE RISKS AND OPPORTUNITIES OF CHANGE IN CLIMATE AND ENVIRONMENTAL SYSTEMS.

